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AUTHOR Knowles, Eric S.
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ABSTRACT

The question whether individual study of risk problems (familiarization) leads to greater risk taking was investigated. Several explanations of the risk taking shifts are explicit in their requirement for group or social interaction. Investigations of whether risk shifts can be produced in the absence of group interaction have produced conflicting results. From an information weighting theory it was hypothesized that the relative number of arguments favoring risk rather than some process inherent in group interaction produces the risky shift. 160 Ss in groups or 5 or alone developed arguments only in favor of the successful risky outcome in 6 Choice Dilemma problems or worked on risk-irrelevant tasks. Risk arguments (p .025) but not group discussion (F 1) produced shifts toward greater risk taking. When the relative number of arguments favoring risk are controlled, individuals working alone show as large a risk shift as groups. Because of earlier failures to find a familiarization effect, it appears that groups may be more efficient or capable than individuals in developing arguments favoring culturally valued positions. (Author)

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INFORMATION WEIGHTING, FAMILIARIZATION, AND THE RISKY SHIFT

Eric S. Knowles[1]

University of Wisconsin - Green Bay

RUNNING TITLE: FAMILIARIZATION AND THE RISKY SHIFT

MAILING ADDRESS: Eric S. Knowles

College of Community Sciences

University of Wisconsin - Green Bay

Green Bay, Wisconsin 54302

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One of the unresolved issues in the study of group risk taking shifts is whether group interaction is necessary to produce these changes. Several explanations are explicit in their requirement for group or social interaction: diffusion of responsibility, risky leadership, release, pluralistic ignorance, social comparison (c.f., Clark, 1971; Pruitt, 1971a, 1971b; Vinokur, 1971), and affiliation and fear reduction (c.f., Rettig, 1966a, 1966b). An information weighting or discussion arguments explanation (c.f., Pruitt, 1971a, 1971b; Vinokur, 1971), however, posits more general mechanisms of which group interaction is a sufficient, but not necessary cause. From this theory, individual study of risk problems, under certain conditions, could also be expected to lead to a risk shift. Tests of this issue have produced conflicting results.

Two studies have indicated that individual study of risk sitautions produced a risk shift as large as that produced by group discussion. Bateson (1966) and Flanders and Thistlethwaite (1967) had subjects, working alone, "familiarize" themselves with Choice Dilemma items by studying or writing detailed notes on each problem. This familiarization condition produced a shift toward risk that was equal in magnitude to the shifts produced by groups who spent an equal amount of time discussing the problems.

However, the familiarization effect has repeatedly failed replication. Teger, Pruitt, St. Jean, and Haaland (1970) report that five separate attempts have failed to find any significant differences in risk preference after individual study of Choice Dilemma problems. Bell and Jamieson (1970), Dion and Miller (1971), Johnston (1968), Rule and Evans (1971), and St. Jean (1970) also failed to find any familiarization shifts. Stokes (1971) found shifts in a more cautious direction. Ferguson and Vidmar (1970) and Myers (1967) found small expected shifts in some situations but not in others. In all of these studies, group discussion produced large risk shifts.

While these failures to replicate the familiarization effect have been taken as indirect support for the group centered theories, an information weighting (or discussion arguments) explantion of the group risk taking shifts provides another way of interpreting these conflicting results. Briefly, the information weighting explanation proposes a three stage process. First, cultural or social values favoring risk or caution which are engaged by the specific risk situation affect the number and strength of the arguments expressed during group discussion. There is evidence that the Choice Dilemma situations invoke values favoring risk or caution (Levinger & Schneider, 1969; Madaras & Bem, 1968; Stoner, 1968) and that group discussion produces more arguments in favor of the valued direction (Myers & Bishop, 1971; Nordhøy, 1962; Silverthorne, 1971). Second, the discussion arguments affect the members' subjective assessment of which components or aspects of the situation are important. Valued

components come to be seen as more important (Rettig, 1966b; Rettig & Turoff, 1967) or assigned a higher utility (Vinokur, 1970, 1971). Third, in reconsidering the choice of a risk level, the altered weight or importance of a component or its different utility produces a shift in the preferred risk level (Slovic, 1967; Slovic & Lichtenstein, 1968; Vinokur, 1970).

Madaras and Bem (1968) proposed that the familiarization effect may result from a parallel process: cultural values affect the number and strength of arguments developed during individual study, which in turn leads to a risk shift. If no risky shift is found, it may be that individual study failed to produce strong arguments in the valued direction. It is possible that the communication processes in groups are more consistently effective than individual study in producing potent arguments favoring the cultural values. Thus, the failure to find risk shifts after individual study could occur for either of two very different reasons: (a) groups may be more effective than individuals in developing value relevant arguments, or (b) there may be some further or separate process operating in a group (diffusion of responsibility, affective bonds, social comparison) that mediates between the cultural values and the risky shift.

Most of the failures to replicate the familiarization effect have not been able to distinguish between these two reasons. Two studies have conducted a content analysis of the arguments produced during individual study, but their results are conflicting. Stokes (1971) found that familiarization subjects produced more arguments

favoring the non-valued direction as well as a preference shift away from the valued direction. Dion and Miller (1971), however, found that familiarization subjects produced more arguments in favor of risk, but did not show a risky shift. Thus, the Stokes study appears to suggest that individuals are not efficient producers of value relevant arguments; while the Dion and Miller study implies that some further process is operating in group discussion to produce the risk shifts.

A more direct test is needed to distinguish between these two reasons for the failure to replicate the familiarization effect. The issue involved is whether the relative number of arguments favoring risk is sufficient to produce the risk shifts or whether there is some additional process operating in group discussion that is necessary for these shifts to occur. From an information weighting theory, it follows that the risky shift is dependent on the relative strength and number of arguments favoring risk. Further, this relationship occurs regardless of whether the arguments are developed alone or in a group. From the diffusion of responsibility, social comparison, risky leader, and other group centered explanations, because of the assumption that social interaction is necessary to produce the risk shifts, it follows that a risky shift occurs after group discussion but not individual study of the risk situations.

The following experiment was conducted to test between these two explanations of the risky shift and of the failure to replicate the familiarization effect. Subjects in an experimental condition were required to list arguments favoring the successful risky outcome

in a series of Choice Dilemma situations; subjects in a control condition worked on lists irrelevant to risk. Half the subjects worked alone; half worked on the task as a group. Note that the argument production was restricted to only information favorable to risk. An information weighting theory would receive support if the arguments condition produced a risk shift in both groups and individuals. The group centered theories would receive support if the arguments condition produced a larger risk shift in groups than in individuals.

METHOD

Subjects

One hundred and sixty male undergraduates at Boston University served as subjects. One hundred and fifty were obtained from an introductory psychology course subject pool and received experiment participation credit for their time. Ten volunteers were obtained through an inter-fraternity council, for which letters of appreciation were sent to participating fraternities. Subjects' ages ranged from 18 to 26 with a median age at 19.

Procedure

Subjects were contacted in class and over the telephone for specific appointment times. They were scheduled in sets of five and the entire set was assigned to one of the conditions.

Risk arguments vs. control. Half the subjects were assigned to a risk arguments condition where they were asked to develop lists of ten reasons why the protagonist in each of six Choice Dilemma situations should desire the successful risky outcome. Bateson's (1966)

familiarization procedure provided a point of departure for this manipulation. However, instead of considering all aspects of the problem, subjects were asked to study and review only one component of the risk problem--the positive aspects of the success component.

In an introduction to the argument listing, the Choice Dilemma situations were presented as "case studies of people faced with a choice between two alternatives." In order to focus on only one component of the risk situations, subjects were asked, "to assume that you are allied with one of the choice alternatives and represent than specific interest. It is your job to demonstrate to the person [in the case study] why he should choose your alternative." To further emphasize the restricted focus, subjects were instructed to, "Approach this task as if you were preparing a 'brief' for someone. A brief is a concise statement of your case or your side of an issue. It presents only one side and does so as advantageously, as positively, and as forcefully as possible." Following the introduction, subjects spent five minutes on each situation, listing the points that would go into such a brief.

In one case, for example, Mr. A is faced with a choice between continuing in his secure, but modestly paying job or taking a more attractive, high paying job with a newly founded company that has a highly uncertain future and might not be able to survive its competition. To develop arguments favorable to risk, subjects were told, "Assume you have been retained as a consultant by the newly, founded company that is trying to hire Mr. A. They have asked you to prepare a brief describing why Mr. A should take the job with

the newly founded company--that is, write a list of all the favorable aspects of the job with the newly founded company." Subjects were given a sheet of paper that included the case description, the specific instructions, and space for listing ten items. This general procedure was repeated for six different Choice Dilemma situations (Kogan & Wallach, 1964, Appendix E: Nos. 1, 3, 4, 6, 8, & 10).

Subjects not assigned to the risk arguments condition worked for a comparable amount of time developing lists, but on non-risk-related topics. Two listing procedures were adapted from Wilson, Guilford, and Christensen's (1953) measures of originality. Subjects in this control condition were asked to develop lists of uses, other than the usual one, for a common object (a brick, a ballpoint pen, a necktie, etc.) and to list possible consequences from an unexpected event (polar ice caps suddenly melting). It was assumed that these procedures would be interesting, unrelated to the risk situations, but provide control subjects with a similar kind of task for a comparable amount of time.

Other conditions were included in the experiment, but did not affect risk taking scores and are not germane to the present hypotheses. Descriptions of these conditions as well as fuller descriptions of the present procedures are presented in Knowles (1971).

Group vs. individual study. Subjects in the arguments and control conditions were assigned to either a group discussion or an individual study setting. In the individual condition, subjects worked alone in visual isolation from one another. In the group condition, subjects met around a circular table and were instructed to "Work as a group on this task. Discuss the problem among yourselves so that you can

develop and consider alternatives. Then decide, as a group, which items you want to write down on the list."

Risk measure. The same six Choice Dilemma items, presented as an opinion questionnaire, were administered individually before and after the listing tasks. Each of the items presents a hypothetical situation where a person is faced with a choice between two alternatives: a certain but undesirable alternative and a desirable but less than certain alternative. Subjects indicate the lowest acceptable probability of success at which they would advise the person to choose the desirable alternative. A ten point scale was used to measure these risk preferences, with "1" indicating a 1-in-10 chance of success, through "9" indicating a 9-in-10 chance of success, and "10" indicating that the person should not take the risk no matter what the probabilities.

Postexperimental questionnaire. Following the final risk measure, subjects completed a questionnaire concerning their experience and reactions as a participant in the study. Among other things, they were asked if they had changed the emphasis they placed on the various components of the situations. In particular, subjects indicated on an eleven-point scale whether the attractiveness of the risky alternative became more important (+5) or less important (-5) in their consideration of the final risk measure.

RESULTS

An analysis of variance that included risk arguments vs. control and group vs. individual study as independent variables and pretest-posttest administration and Choice Dilemma items as correlated variables

was used to analyze the effects of these variables on the risk preference scores. The results of this analysis indicated that the arguments condition in comparison to the control condition produced a significant risky shift ($F = 5.43$, $df = 1/152$, $p < .025$). That is, subjects who developed lists of arguments favorable to risk shifted their risk preference to a more risky level on the posttest, whereas subjects who developed lists irrelevant to risk did not (Table 1). The interaction between arguments and items on the risky shift was nonsignificant ($F < 1$) suggesting that argument listing operated similarly for each of the Choice Dilemma items.

The risk shift was just as large for individuals as it was for groups in the arguments condition. In the analysis of variance, group discussion did not have a main effect, nor did it participate in any significant interactions. Of particular interest is the finding that group discussion did not interact with risk arguments in affecting the risk shift ($F < 1$). If group discussion of the risk situations is required for the risk shifts to occur, it would be reflected in this interaction where group discussion of the risk arguments would be expected to show a larger risky shift than individual study of the risk arguments or consideration of nonrisk issues. The finding that this interaction was not significant, coupled with the significant effect of risk arguments on risk preferences, supports the information weighting hypothesis that the relative number of arguments considered is responsible for the risk taking shifts.

Results from the postexperimental questionnaire were consistent with an information weighting theory. Subjects were asked whether

the attractiveness of the risky alternative became more important or less important in their consideration of the second risk measure. Subjects in the arguments condition reported that they attached more importance to the attractiveness of the risky alternative (+0.86) than did the control subjects (+0.06). While not large, this difference was significant ($p < .01$), suggesting that the argument condition increased the subjective importance or weight accorded the success components of the risk situations.

It is also of interest whether these changes in the reported importance of the success component were related to the risky shift. Since there were differences between the argument and control conditions on both these measures, the correlations were computed separately for each condition. Increases in the importance of the success components were significantly associated with shifts towards greater risk. This relationship occurred at the same level for both the arguments condition ($r = .36$, $df = 78$, $p < .01$) and the control condition ($r = .34$, $df = 78$, $p < .01$). While in the direction expected from an information weighting theory, these findings must be interpreted with a great deal of caution since subjects may have answered the postexperimental questionnaire in a way that justified their risky shift.

DISCUSSION

This study was designed as a test between an information weighting theory and various group centered theories of the risk taking shifts. In particular, the controversy over the familiarization effect led to the question of whether group interaction is necessary for the shifts

to occur or whether the number and strength of arguments favoring risk is sufficient to produce the shifts. The results supported the information weighting explanation that the amount and kind of information produced in discussion rather than some process inherent in group interaction leads to the risk taking shifts. When the relative number of arguments favoring risk were controlled, individuals working alone showed as large a risk shift as group discussants.

The conclusion that the number of arguments, alone, are responsible for the risk shifts would seem to argue against the diffusion of responsibility, risky leadership, and affiliation and fear reduction theories which share the assumption that a group structure is necessary for the shifts, and against the social comparison, pluralistic ignorance, and release theories which require interpersonal communication concerning risk.

Additional evidence that the number of arguments favoring risk increased the importance of the success component and that an increase in the importance of this component was correlated with the risk shift was also consistent with an information weighting explanation. However, because of the post hoc and correlational nature of these findings, they can not be considered as conclusive evidence that these information weighting processes were occurring. Further, more direct tests of these mechanisms are required.

These findings have implications for the familiarization issue. Madaras and Bem's (1968) proposal that Bateson's familiarization procedure may have created differential information weighting--subjects

thought of more points consonant with the cultural values--and this created the risky shifts he found, receives some implied support. The present study suggests that such information weighting does lead to a risky shift. Whether Bateson's or Flanders and Thistlethwaite's subjects did produce more arguments favoring risk is unknown. The present study suggests the utility of inspecting the number and strength of arguments produced during individual study and group discussion. Further investigations of the familiarization issue and of group discussion should follow the lead of Dion and Miller (1971), Silverthorne (1971), and Stokes (1971) and test the effects of these procedures, not only on risk taking, but on the information production and risk component weighting as well.

When this study is compared to earlier attempts to replicate the familiarization finding, the question is raised whether unfocused individual study of the risk problems created differential weighting of information. The finding that arguments and not group interaction were important for the risk shifts suggests that failures to find a familiarization effect may result from the failure of unfocused individual study to consistently develop potent arguments differentially weighted in the valued direction. It is still a puzzle why the cultural values associated with risk and caution so readily and consistently produce arguments in the valued direction during group discussion but not during individual study. The familiarization issue appears to raise this more general question concerning the communication processes in groups that lead to producing and considering risk-valued arguments. This study suggests that when the arguments produced, alone

or in group discussion, strongly favor risk, the result is a shift in the direction of the weight of the arguments.

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FOOTNOTES

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Requests for reprints should be addressed to the author, College of Community Sciences, University of Wisconsin-Green Bay, Green Bay, Wisconsin, 54302.

TABLE 1

Mean Risk Levels and Risk Shift by Condition

Condition	Pretest	Posttest	Risk shift
Risk Arguments			
Group	5.08	4.74	-0.34
Alone	5.45	5.17	-0.29
Control			
Group	5.49	5.55	0.06
Alone	5.42	5.55	0.13